NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Clearing and Snagging

(FT)

No. 326

Definition

Removing snags, drifts, or other obstructions from a channel.

Purpose

To increase the flow capacity of a channel by improving its flow characteristics; to prevent bank erosion by eddies; to reduce the forming of bars; and to minimize blockages by debris and ice.

Special attention shall be given to restoring, maintaining or improving landscape resources and habitat for fish and wildlife, where applicable.

Conditions Where Practice applies

Any channel or floodway where the removal of trees, brush, and other obstructions is needed to accomplish one or more of the listed purposes. If clearing and snagging are likely to result in channel erosion, impairment to the landscape resource quality, or impairment to habitat for fish and wildlife, either the clearing and snagging shall not be done or practices to minimize such damages shall be applied concurrently with the clearing and snagging.

Federal, State, and Local Laws[1]

Design and construction activities shall comply with all federal, state, and local laws, rules, and regulations governing activities in or along streams, pollution abatement, health, and safety. The owner or operator shall be responsible for securing all required permits or approvals and for performing in accordance with such laws and regulations. NRCS employees are not to assume responsibility for procuring these permits, rights, or approvals, or for enforcing laws and regulations. NRCS may provide the landowner or operator with technical information needed to obtain the required rights or approvals to construct, operate, and maintain the practice.

Permits may be required from the following agencies:

1. U.S. Army Corps of Engineers.

2. West Virginia Department of Natural Resources.

3. West Virginia Public Lands Corporation.

All work must be coordinated with the local West Virginia Department of Natural Resources Biologist in accordance with the Memorandum of Agreement between NRCS, Soil Conservation Districts, and WV-DNR contained in "West Virginia High Quality Streams".

Planning Considerations

Water Quantity

1. Possible downstream flooding.
2. Effect of changed drawdown on bank stability.
3. Effect of changed flow conditions on ground water recharge.

Water Quality

1. Effects of discharge on the flood plain and channel relative to erosion and sediment production, both during construction and after establishment.
2. Effects sediment load, sediment-attached substances, organic loadings.
3. Relationships between stream quality and aquifer quality where ground water recharge occurs.
4. Temporary and long-term effects on visual quality of water and landscape.
5. Effects on onsite and downstream water temperatures.

NRCS, October 1980 NRCS-WV, TG-IV, October 1996

Design Criteria

The capacity of the channel, both before and after improvement, shall be determined by use of Manning's Formula, using applicable values of the ***roughness coefficient*** "n," for both conditions. The value of "n" used to determine channel capacity after improvement shall reflect the degree of maintenance expected in future years.

Roughness coefficient "n" shall be determined by procedures contained in supplement "B" of NEH-5, Hydraulics. The capacity of the channel shall not be impaired by the clearing and snagging operation.

When the purpose of the work is to increase the flow capacity of the channel, the "after improvement" capacity shall be adequate to provide the protection required by the project. If the needed capacity cannot be provided by clearing and snagging alone or in combination with other practices, such as floodways or dikes, then the measure shall be designed as an open channel, waterway, or drainage main, as appropriate.

The area to be cleared and snagged shall include the perimeter of the channel, the flow area of the floodway, or both. Adjacent trees or other objects that may fall into the channel shall also be included. Clearing and snagging may be specified for other areas, including berms, for use as temporary disposal areas or travelways, or for planned conservation uses.

Channel stability shall not be impaired by clearing and snagging. The criteria for determining channel stability in ***the West Virginia standard for*** open channels (582) shall be ***met.*** The effect of removing obstructions on downstream reaches shall be considered.

Environmental Criteria

Fish and Wildlife. ***Special attention shall be given to maintaining or improving habitat for fish and wildlife.***

Provisions contained in West Virginia standards for Fish Stream Improvement (395), Wildlife Upland Habitat Management (645), and Wildlife Wetland Habitat Management (644) shall be incorporated where possible and necessary.

Landscape Resources. ***Consideration shall be given to the use of construction materials, grading practices, vegetation, and other site development elements that minimize visual impacts and maintain or complement existing landscape uses such as pedestrian paths, climate controls, buffers, etc.***

Construction Activities.
Where possible, measures will be designed such that construction activities can be performed from the bank. Erosion and sediment control measures such as diking, mulching, temporary seeding, etc. will be incorporated in the design.

Woody material, excess excavated material, and other debris shall be disposed of by methods and in areas such that the material cannot re-enter the stream.

Plans and Specifications

Plans and specifications for clearing and snagging shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Specifications for clearing and snagging may be developed from NEH-20 specifications, WV 700 series specifications, or the attached specification with the following guidelines:

1. Limits of clearing and snagging shall be shown on the drawings.

2. Manmade structures and sediment bars that are to be removed shall be designated on the drawings and the extent of removal shall be shown.

3. Trees and other structures not to be disturbed shall be shown on the drawings.

4. Disposal methods and areas shall be designated on the drawings. Finished grade for disposal and spoil areas shall be shown.

5. Vegetative requirements shall be shown on the drawings or in an appropriate seeding specification.

6. Measures for erosion and sediment control and fish and wildlife enhancement will be detailed on the drawings and/or in appropriate specifications.

Operation and Maintenance

An operation and maintenance plan shall be prepared for clearing and snagging. The plan shall include, as a minimum, the following items:

1. Annual inspection of the channel to assess the need for remedial clearing and snagging.

2. Inspection of stumps to check for sprouts and regrowth.

3. Check for areas of bottom or bank instability that need treatment.

1 Bold italics added by West Virginia.

NATURAL RESOURCES CONSERVATION SERVICE

Conservation Practice General Specifications

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All trees, stumps, and brush to be removed within the perimeter of the channel shall be cut as close to the ground as the cutting tools permit. If other areas are to be cleared, the trees, brush, and other woody vegetation shall be cut within the specified maximum distance above ground level.

Trees shall be felled in such a manner as to avoid damage to other trees and property that are not a part of the clearing and snagging operations. Special attention will be given to protecting and maintaining key shade , food, and den trees when their removal is not necessary.

Down trees, logs, drifts, boulders, debris and other obstructions lying wholly or partly in the channel shall be removed. Piling, piers, headwalls, and sediment bars that obstruct the free flow of water shall be removed if so designated in the drawings.

Construction shall be done in such a way that chemicals, fuels, lubricants, and waste materials will not enter the flow area. If at all possible, construction equipment other than hand-operated equipment should not work in the channel. Erosion, air pollution, and water pollution will be minimized and held within legal limits.

Selective snagging, where possible, shall be performed primarily with hand-operated equipment, water-based equipment, or small equipment used in a manner that will minimize soil, water, and other resource disturbances.

Trees, logs, and all combustible material resulting from the clearing and snagging operations shall be burned, buried, or piled in designated disposal areas as specified. All burning shall be performed outside the channel and shall conform to regulations in effect in the area. Material shall be disposed of in such a manner that it does not float away or re-enter the channel. Residue from burning and non-combustible material shall be buried outside the channel or placed in designated disposal areas.

All buried material shall have a minimum of 1.0 ft. of earth cover unless specified otherwise on the drawings. Excavated material will be placed at the location and in the manner shown on the drawings.

If herbicide treatment is planned, the stumps and brush in the specified area shall be treated at the time of clearing according to the recommendations of the manufacturer of the herbicide specified or being used. Only herbicides designated for use around water sources, by the U.S. Environmental Protection Agency, shall be used.

Measures and construction methods that enhance fish and wildlife values and those for erosion and sediment control shall be incorporated as shown on the drawings.

Upon completion of construction, all disturbed areas shall be graded smooth and blend with the surrounding ground.

A protective cover of vegetation shall be established on all exposed surfaces where soil and climatic conditions permit. Lime and fertilizer shall be spread at the specified rate and shall be disked into the soil to a depth of 4 inches to prepare a seedbed. Seed and mulch shall be applied at the specified rate. In some cases, temporary vegetation may be used for protection until conditions are suitable for establishment of permanent vegetation.

Where soil or climatic conditions do not permit the establishment of vegetation, and protection is needed, nonvegetative means such as mulches or gravel may be used.